

HORAIRES SEMAINE 13

En construction

	Lundi 8/7	Mardi 9/7	Mercredi 10/7	Jeudi 11/7	Vendredi 12/7	Samedi 13/7
8h						
9h						
10h						
11h	Poonen Darboux	Voloch Darboux	Poonen Darboux	Voloch Darboux		
12h						
13h						
14h				Skorobogatov		
15h	Alpoge Darboux		Alpoge Darboux			
16h	Thé	Boisson et fromage	Thé	Thé	Thé	
17h						
18h						
19h						
20h						

Levent ALPOGE: *Arithmetic Statistics*

I will give an introduction to the techniques that allow one to count number fields of small degree and bounded discriminant, to bound the average ranks of elliptic curves and of higher genus hyperelliptic curves, and to bound the number of integral/rational points on said curves. The methods for counting orbits in certain cases are well-enough developed that I hope to impart on the audience how to turn

Date: Lundi 8 juillet–Dimanche 14 juillet.

the crank, so to speak. It will transpire that in these cases we will always reduce to counting integral points of bounded height in a lattice. I will indicate some first results towards counting orbits with nontrivial polynomial relations among their invariants. I will try to present the parametrizations and other techniques with as much intuition as I can give (for example: how one could have come up with these parametrizations), and the material will be accessible to all participants of the program.

Bjorn POONEN: *p-adic approaches to rational points on curves*

In these four lectures, I will describe Chabauty's p-adic method for determining the rational points on a curve whose Jacobian has rank less than the genus, hint at Kim's nonabelian generalization, and finally discuss the recent paper of Lawrence and Venkatesh that uses p-adic period maps to give a new proof of Faltings's theorem.

References:

- McCallum-Poonen, The method of Chabauty and Coleman
- Corwin, From Chabauty's method to Kim's non-abelian Chabauty's method
- Lawrence-Venkatesh, Diophantine problems and p-adic period mappings

Notes:

pdf file

Alexei SKOROBOGATOV: *Cohomology and the Brauer groups of diagonal surfaces*

Felipe VOLOCH: *Obstructions for rational points on curves*

This series of four lectures will discuss the various obstructions to the existence of rational points on curves over global fields, such as the Brauer-Manin obstruction, the finite descent obstruction and the obstructions coming from Grothendieck's section conjecture and the Chabauty method as well as weakenings and strengthenings of these various obstructions. We will discuss the relationship among these conjectures and some of the progress that has been made. We will look at the function field case, where more is known. We will discuss the connection with modularity, where some progress can be made sometimes contingent on some familiar conjectures.